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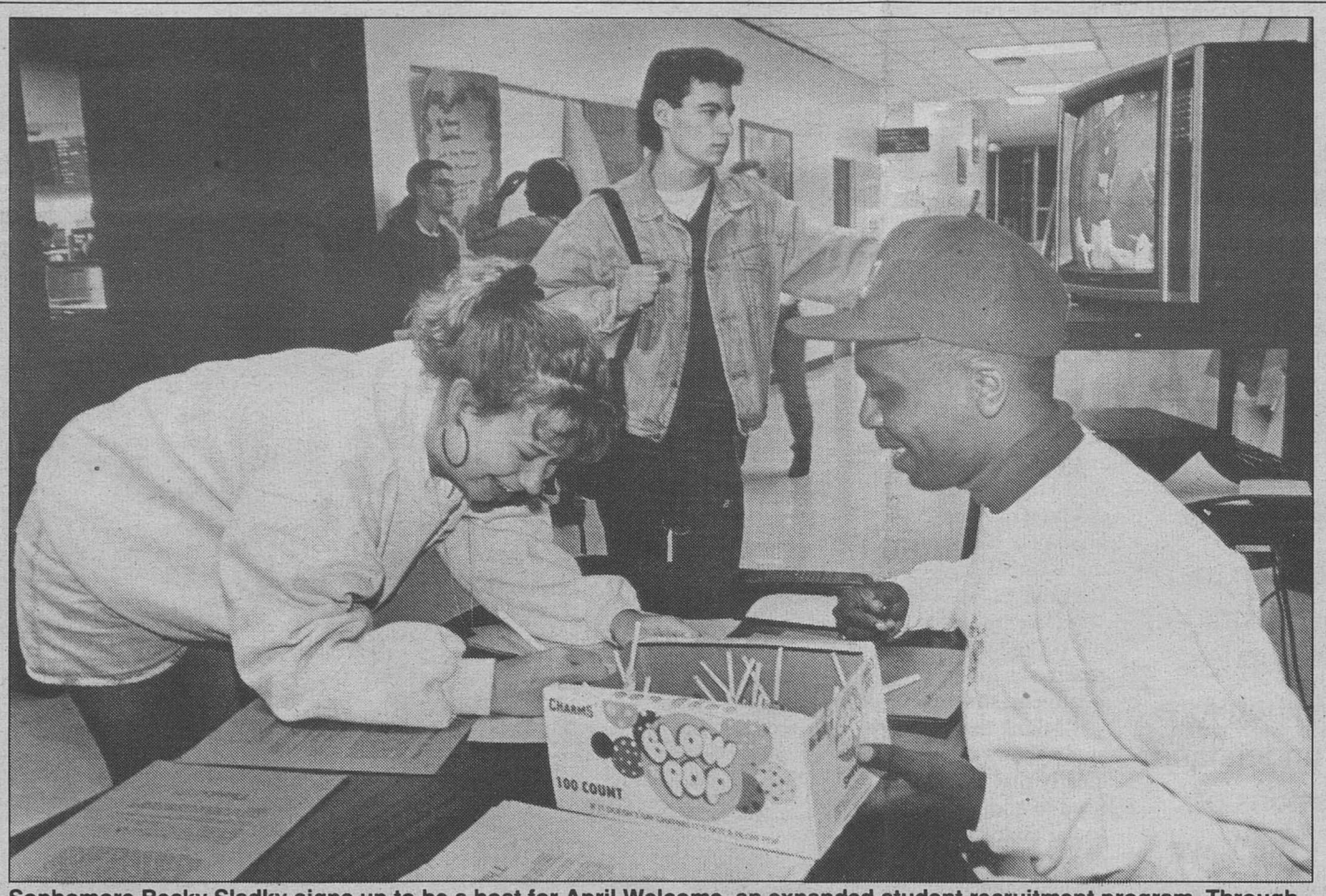


Sophomore Becky Sladky signs up to be a host for April Welcome, an expanded student recruitment program. Through the program, admitted prospective students will tour campus, visit lectures and spend the night in a residence hall with their hosts. Freshman Broderick Lee recruits April Welcome student hosts in the Wohl Center. Senior Dave Breitstein (background) watches a video about the University.

The 'Eve' controversy

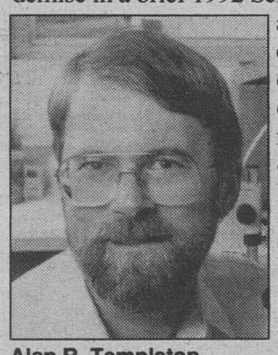
Computer analysis shows ultimate roots story still in the making

Reports of her death are not greatly exaggerated.

Eve, the hypothetical African mother of all modern humans, is officially dead, according to a genetic analysis by a Washington University biologist.

Alan R. Templeton, Ph.D., has driven the last nail into her coffin in a March 1993 special issue of American Anthropologist, "A Current Controversy in Human Evolution," edited by his colleague, Robert Sussman, Ph.D., professor of anthropology.

Templeton earlier had suggested Eve's demise in a brief 1992 Science journal article where he claimed that the computer analysis of genetic material used as proof of Eve's existence had been performed incorrectly. That 1987 analysis, done by a research group under the late Allan C. Wilson, Ph.D., University of California, Berkeley, examined mitochondrial DNA from more than 100 contemporary people worldwide. Mitochondrial DNA is found outside the nucleus of cells and is the only genetic material in cells that is strictly maternally inherited.



Alan R. Templeton

Because mitochondrial DNA only has 37 genes that do not recombine with one another, compared with about 100,000 genes that do recombine in nuclear DNA, it is easier to trace the mutations, which give scientists a sort of molecular clock to interpret evolution.

There is no doubt that all mitochondrial DNA in humans today traces back to a single common female ancestor. However, the Wilson group concluded that this common female ancestor — Eve — lived in Africa between 140,000 and 280,000 years ago. The group includes Wilson, Rebecca L. Cann, Ph.D., University of Hawaii, Mark Stoneking, Ph.D., Pennsylvania State University, and Linda Vigilant, Ph.D., also of Penn State. Templeton's 1992 Science article disputed the claim of an African root, showing that the root's geographical location cannot distinctly be determined from the present data.

Out of Africa hype

Templeton's current article deals primarily with other claims of the Wilson group. They concluded not only that all modern human mitochondrial DNA descended from Eve, but also that all modern humans (including both their mitochondrial and nuclear genes) descended from the single African population to which Eve belonged. Humans from this one small population then expanded "Out of Africa" and replaced the less advanced Old World humans in Europe, Asia and Africa. The counterpoint to these views is that modern humans evolved more or less simultaneously throughout the Old World. The "Eve" and "Out of Africa" theories spawned a frenzy in the popular as well as technical media and together were hyped as the ultimate roots story.

But in "The 'Eve' Hypothesis: A Genetic Critique and Reanalysis," Templeton refutes four major points of the Eve hypothesis and reveals the use of a novel computer program he devised that can associate geographical movement of genes with pieces of genetic trees. His analysis is the first geographical examination of the Eve data. And it shows that DNA, carefully analyzed, can be a sort of high-tech fossil to reconstruct the past.

"My analysis shows that both the Eve and Out of Africa theories are incompatible with the data," says Templeton, an evolutionary biologist widely known for his genetics work with endangered species. He also holds a master's degree in statistics. "The best we can say now is that the root is not known. However, Eve proponents probably won't accept the results of my analysis. So, the paper and the issue of American Anthropologist aren't really going to close the matter, just increase the debate.

"A major point of my paper is that the geographical placement of the root is a

Continued on page 6

Architecture class teaches universal design, sensitivity

Architecture students recently tried experiencing the world from the perspective of people with disabilities. For a few hours, students maneuvered in wheelchairs, wore blindfolds over their eyes or plugs in their ears to try to get a sense of the needs of people with physical impairments. Some students also spent an entire day in wheelchairs. One took the bus to the St. Louis Galleria, another tried to go out to dinner.

For Michele Lewis, a graduate student in the course, just being at home was difficult.

"I even had trouble getting into my building, and there are people living there who are in wheelchairs," she said. "The hallways are too skinny, I couldn't reach my toothbrush and the stove is too high. How are you supposed to know when your water is boiling when you can't see it?"

This empathic experience is part of a course taught by Mary Ann Lazarus, vice president at Hellmuth, Obata, and Kassabaum (HOK), an international architecture firm based in St. Louis. Lazarus, who received a master's degree in architecture from the University in 1978, also is an adjunct professor at the School of Architecture and a specialist on the Americans With Disabilities Act (ADA). The course, titled "Universal Design: The Implications of the ADA on Design," addresses ways to incorporate accessibility into architectural design.

The ADA, a civil rights law created to enable equal access, went into effect last January. In the class, Lazarus goes beyond the nuts and bolts of the ADA to sensitize students to the needs of people with disabilities, to understand the legal history of the ADA, and finally, to go beyond the letter of the law and to learn the concepts of universal design.

Universal design incorporates the needs of the entire population into a single architectural design. For example,

Continued on page 8

Public health expert to give Thomas Hall Lecture

Dorothy Porter, a historian of medicine, will give the Thomas Hall Lecture at 4 p.m. April 8 in Room 215 Rebstock Hall. Her talk, "A Brave, New, Healthy World: Social Medicine and Scientific Humanism in the 20th Century," is part of the Assembly Series and is free and open to the public.

Porter, Wellcome Research Lecturer in the History of Medicine at the University of London, is an expert on public health, particularly women's health in Britain in the 20th century, and the history of eugenics, especially as it is related to women. In 1990-91 she was a visiting lecturer in the Department of the History of Science at Harvard University and in 1989-1990 a postdoctoral fellow in the Department for the History of Health Sciences at the University of California, San Francisco.

Porter, who received her doctorate in history in 1984 from University College London, has written and reviewed numerous articles in scientific journals and published several books. *The History of Health and the Modern State: National Contexts Compared,* an essay collection that she edited, is in press. Among her books in progress is *A Political History of Public Health.*

Her 1988 *In Sickness and In Health: The British Experience 1650-1850* and her 1989 *Patient's Progress: The Dialectics of Doctoring in 18th-Century England* were co-authored with Roy Porter.

The lecture is co-sponsored by the Department of Biology. For more information, call 935-4620.

In This Issue...

Medical Update

Blacks' high lung cancer death rate blamed on social factors

Lung cancer, the nation's leading cause of cancer deaths, takes a disproportionately high toll on black Americans. Compared with whites, blacks are more likely to get lung cancer, and they die of it more often and more quickly. This racial gap probably is not due to biological differences, concludes a recent multicenter study led by an investigator at Washington University's Mallinckrodt Institute of Radiology.

The study holds important implications for future research and for public health efforts aimed at closing the gap, says the investigator, Mary Graham, M.D., instructor of radiology at the School of Medicine and the study's lead author.

"This study can be seen as one piece of data that suggests there are not biologic differences but that we should be looking toward social or environmental factors to account for these differences in outcome between the races," Graham says. The findings were published in Vol. 84 of the Journal of the National Cancer Institute.

In a retrospective study, Graham evaluated data from 1,701 patients who had been treated for inoperable non-small-cell lung cancer at multiple medical institutions. All the patients were treated for their cancer as participants in four national clinical trials conducted by the Radiation Therapy Oncology Group (RTOG) from April 1983 to May 1989. RTOG is a division of the American College of Radiology that oversees studies dealing with cancer treatment. Graham looked at several factors, including age, sex, weight loss, stage of disease and survival, to see whether any differences existed between blacks and whites.

"In patients receiving similar staging procedures and similarly prescribed therapy under the auspices of a national controlled trial setting, we were unable to detect any differences in survival between black and white patients," the investigators wrote in their study conclusion. In other words, when blacks and whites receive the same level and quality of medical care, the racial gap in survival for lung cancer is not apparent, Graham explains.

Median survival time was nine months for blacks and 10 months for whites. One-year survival rates were 40 percent for whites and 44 percent for blacks; two-year survival rates were 17 percent in whites and 15 percent in black patients. The only significant difference between the races was in the amount of weight loss; 24 percent of black subjects began the clinical trial with weight loss of more than 10 percent, compared with 13 percent of whites. Factors that were found to predict survival included weight loss, age, sex, and stage of disease; these factors were consistent with other reports of prognostic factors for patients with lung cancer, Graham says.

Racial differences regarding lung cancer have been found in many previous studies, Graham says. Black men have higher incidence rates, and black patients generally show a poorer survival rate than do whites, she says. Incidence of the disease has increased dramatically since the 1950s, and that rate of increase is highest among black males. Although survival rates have improved for white populations, they have not improved for blacks. In fact, the death rate from lung cancer for black men is 45 percent higher than for non-minority men.

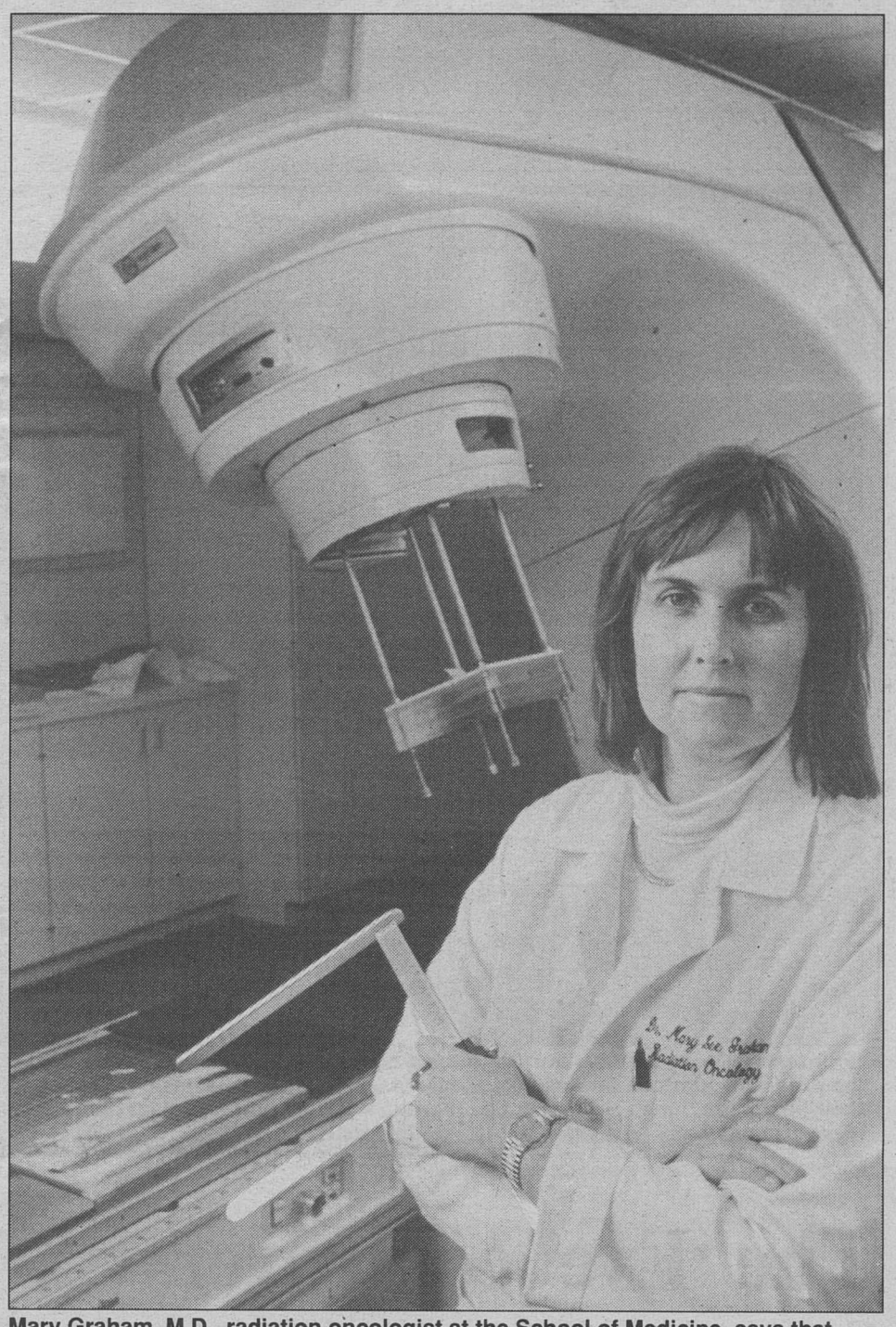
The gap is not limited to lung cancer. When all cancers are considered together, black Americans have a 12 percent lower five-year survival rate and an 11 percent higher incidence rate compared with whites, Graham's study states.

Several factors have been suggested to account for these disparities, she says. They include poor diet, occupational exposure to hazards such as asbestos, high-risk behaviors such as smoking and alcohol consumption, and insufficient access to health education and to health care resources. Many of these factors are related to low socioeconomic status, she notes. Because race and socioeconomic status are interrelated in this country, it has not been clear whether blacks' relatively poor outcomes result from environmental factors or from biological differences, she explains. This study attempted to even out some of the environmental variables by studying people who all received similar treatment, she says.

> "There is evidence that tobacco companies target people who have less education and therefore less ability to understand the ramifications of smoking. So I think we need to ask whether we are meeting the needs of a particular population in terms of teaching them about the risks of lung cancer."
>
> **— Mary Graham**

"I think the study shows very clearly that we need to address social factors. For example, there is evidence that tobacco companies target people who have less education and therefore less ability to understand the ramifications of smoking. So I think we need to ask whether we are meeting the needs of a particular population in terms of teaching them about the risks of lung cancer," Graham says. Further investigations are needed to fully understand the racial gap in cancer survival, she adds.

Other institutions participating in this study were the Radiation Therapy Oncology Group Headquarters, Philadelphia; the Medical College of Milwaukee, Wis.; Albert Einstein Medical Center, New York; the University of California, San Francisco; the University of Alberta, Edmonton, Canada; Fox Chase Cancer Center, Philadelphia; Wayne State University, Detroit; Radiological Associates of Sacramento; and the University of Texas M.D. Anderson Cancer Center, Houston.



Mary Graham, M.D., radiation oncologist at the School of Medicine, says that social factors need to be studied to find out why blacks are more likely than whites to get lung cancer and die of it more often and more quickly.

Lung cancer is the leading cause of cancer deaths in the United States, according to the American Cancer Society. The ACS estimates that in 1992 lung cancer caused 146,000 deaths in this country and that 168,000 new cases occurred. The disease surpassed breast cancer in 1987 as the leading cause of death in American women.

— Juli Leistner

Kahn to direct medical informatics division

Michael G. Kahn, M.D., Ph.D., assistant professor of medicine, has been named director of the Division of Medical Informatics at the School of Medicine.

Kahn came to Washington University in 1988 as an instructor of medicine and became an assistant professor in 1989. His research focuses on developing ways to use computerized biomedical information to solve problems in medical research and patient care.

Michael G. Kahn

Kahn's current projects involve using computer data bases for clinical decision support in areas such as quality assurance and infection control.

He also is one of several teachers for the Training Program in Medical Informatics, whose graduates receive either an M.S. or Ph.D. in computer science or a related discipline. The program is administered through the Institute for Biomedical Computing, a joint department of the School of Medicine and the School of Engineering.

Kahn serves on the quality assurance committee of the Department of Internal Medicine, as well as the quality assurance executive committee of Barnes Hospital. He is a member of several professional organizations and serves on the advisory editorial board of the journal Artificial Intelligence in Medicine.

Kahn received his medical degree from the University of California, San Diego, in 1979 and served his internship and residency in internal medicine at St. Mary Medical Center in Long Beach, Calif. He completed his doctorate in medical information sciences at the University of California, San Francisco (UCSF). While a doctoral candidate there, he was also a visiting research scholar at the Medical Computer Science Group at Stanford University's Knowledge Systems Laboratory, a Robert Wood Johnson Clinical Scholar at UCSF, a postdoctoral fellow for the National Library of Medicine and a staff physician at two San Francisco-area hospitals.

Record

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Washington People

Turner switches network vision to reality

A funny thing happened to Jonathan S. Turner, Ph.D., professor and chair of computer science, on his way to a theatre degree from Oberlin College in Ohio. He found himself becoming gradually more steeped in the technical side of theatre — set design, construction, and lighting displays — and realized he was more adept at designing lines than memorizing them.

He made the first big switch of his life by transferring his junior year from Oberlin to the Three-two Engineering Program at Washington University, where he graduated with a double major in computer science and electrical engineering in 1977. Then, while a researcher at Bell Laboratories in Chicago, Turner laid the groundwork for his second big "switch" — the one for which he is becoming known worldwide.

The switch that is the centerpiece of the Washington University Asynchronous Transfer Mode (ATM) system began in 1977 with the visions of an energetic researcher who also was pursuing a doctoral degree at Northwestern University with the aid of the Bell Labs Doctoral Support Program. Turner, who received his Ph.D. in 1982, was part of a small group at Bell Labs in charge of designing a network that could transmit voice and data simultaneously. This "fast-packet" system, as it was called then, theoretically would transmit packets of various digital data at the then astounding rate of 1.5 megabits per second (one and one-half million bits per second).

"The goal," Turner recalls in his fifth floor office in Bryan Hall, "was to make networks more general, to combine the different types of data into one package. At the time, you had CATV for video, telephone networks for voice, and computer networks that were good only for low-speed data. We wanted to create a network that would handle all of these."

During the 1980s, as optical fiber became increasingly available and faster networks were being designed, the emphasis shifted to systems that could operate at rates hundreds of times faster than fast-packet systems. In 1989, this technology was dubbed asynchronous transfer mode (ATM). In addition to speed, ATM differs from its predecessor in two other ways: it can support the transmission of video data from one point to many (multipoint), and all the data units the network handles are the same size, facilitating the building of hardware switches.

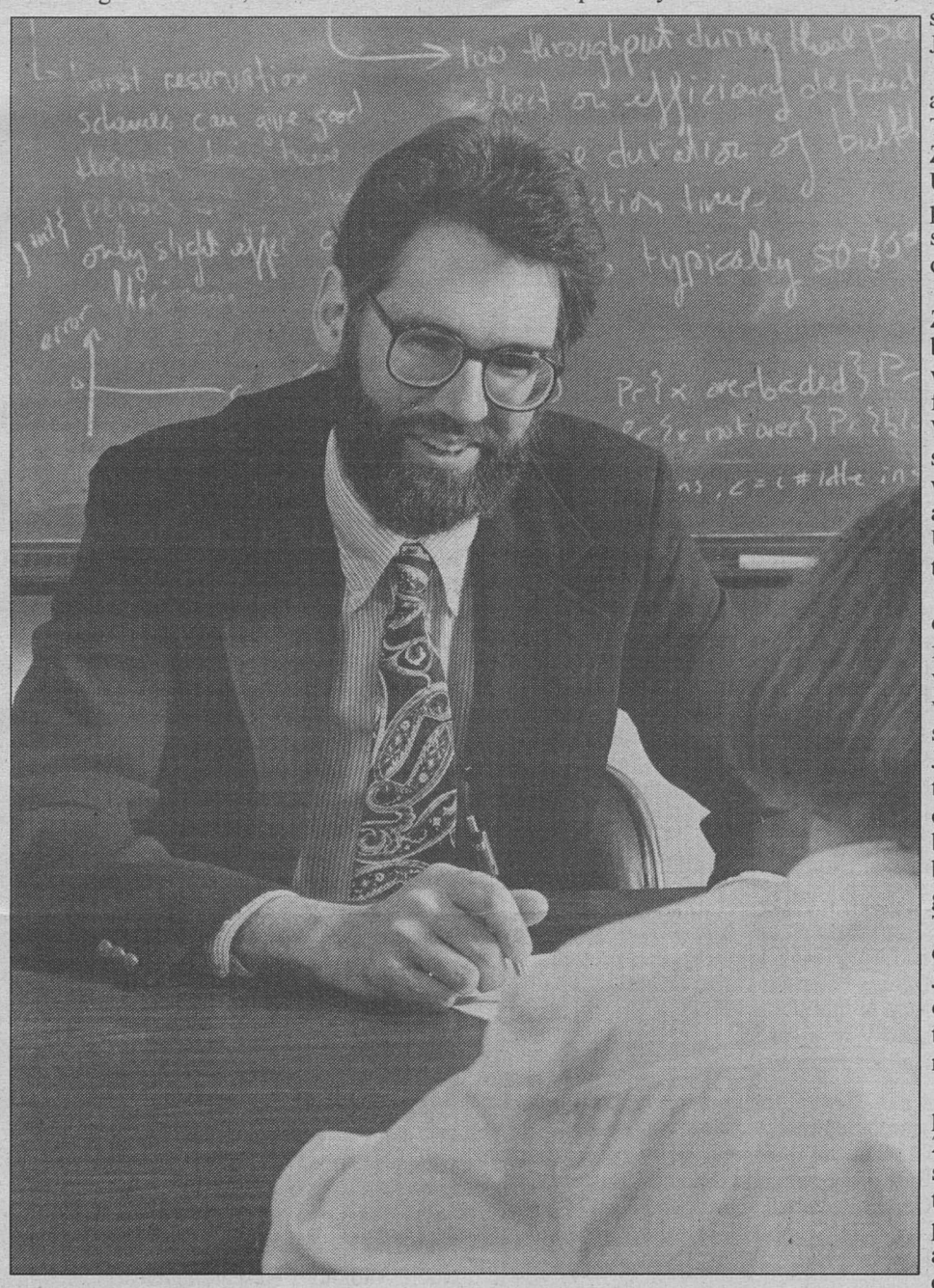
During Turner's six-year stint at Bell Laboratories, there were two groups at Bell Laboratories trying to design a network. One group focused on extending the conventional telephone technology and making it more flexible to handle the other data. The other group pondered ways of taking the status quo packet-switching technology and making it perform better. Turner was in the latter group. His major contribution — the foundation of his vision — was to show how the core switching function could be simplified or left separate from other functions implemented in network software, so that the hardware and software could more effectively interact.

"That was the key insight to the success of the system," Turner says. "What was needed was the right division of labor in order to achieve the performance benefits of special-purpose hardware and the flexibility of software. It's very important to have interdisciplinary people who understand both hardware and software and the limitations of each. Too often systems get built by people who only understand one or the other."

Turner's vision blossomed after he came to Washington University as assistant professor in 1983. He began working in conjunction with Jerome R. Cox, D.Sc., then chair of computer science, and Pierre Costa, senior research associate in computer science, among others, in designing multipoint networks with multipoint-integrated circuits. Over his 10 years at Washington University, Turner collaborated with a host of corporate sponsors ranging from Southwestern Bell, NEC-America, Southwestern Bell Technology Resources Inc., to Synoptics and Ascom Timeplex, to name a few very powerful and influential companies. During that time he steadily improved the Washington University ATM switch, and his colleagues — industry, faculty and students alike — gradually constructed the ATM system. The system is unique among approximately 12 others worldwide because of Turner's pioneering switch architecture and his use of special integrated circuits that incorporate the basic functions in efficient ways.

"You could do the same thing with standard electronic parts, but then you might need 10 circuits that do the work of one of ours," Turner points out. "One of our key advantages is our multipoint capability. A major component built into our switch is the ability to transmit from one source to millions of others. Other systems don't have that built-in capacity."

The University's system is designed with 16-port switches, each with an aggregate switching capacity of 1.6 billion bits per second, operating at 100 million bits per port. Turner's switching architecture can be expanded to over one gigabit (one billion bits) per port, with a total capacity of over one terabit (one million million bits). That's a rate better than 10,000 times faster than current telephone systems.



"One of the great things about Project Zeus is the active role students played in it. Under our guidance, they designed the computer chips used in the switch."

The test-applications component of the ATM system here is known as Project Zeus, and within two years it will have an impact on many of Washington University's students and employees. Project Zeus is a consortium of academia, the telecommunications industry and hardware manufacturers under the leadership of Turner and Cox. In August 1991, Project Zeus was unveiled for the first time in front of a packed lecture room in McMillan Hall. There, more than 100 researchers nationwide looked at a big screen and saw a multimedia medical demonstration that linked doctors, patient and audience at three different places in the St. Louis area. The resolution of images and data coming over the ATM network was clear and distinct. Everything happened in real-time.

Approximately a decade after he began contemplating the network, Turner's vision had become reality. In the Oct. 26, 1992, issue of Communications Week, which is to the telecommunications industry what the Sporting News is to baseball, Turner was named one of the "Top 10 Visionaries" in the data networking field. Perhaps adding even more substance to the vision, in March of this year, Synoptics announced the marketing of the first commercial broadband switch based on Turner's switching architecture at the Spring Interop, the trade show of the industry. Synoptics, a Project Zeus sponsor, and a leading computer networking company, is offering the 16-port switch in a package not much larger than a PC for just $24,000, less than one-third of the present market cost of an ATM system.

"This is a huge step in the right direction," Turner says. "As a result of the Synoptics product, lots more vendors will look at our switching technology in the next few years, and the cost is going to become even cheaper."

Turner, who holds more than a dozen patents on ATM switching concepts, succeeded Cox as chair in July 1992.

"We're fielding questions about sponsors and partners in Project Zeus all the time," says Turner. "One of the great things about Project Zeus is the active role students played in it. Under our guidance, they designed the computer chips used in the switch, and many of the students are now out in the industry on their own."

There are 11 chips for every one of Project Zeus's 16 ports, Turner explains. All were done by Washington University graduate students who, he says, "for the most part had done the first chip they had constructed in their lives. We took great pains to avoid designing excessive functionality into their chips, to keep them within the ability of the designers." Engineers at Synoptics, for instance, took the Washington University student-designed chips and made them even more compact.

According to Ron Schmidt, chief technical officer at Synoptics, Turner's impact has been felt in his company through both Turner's vision and his students. "About four years ago, we decided we needed a partner to help jumpstart us in ATM technology, and we turned to Jon," Schmidt explains. "One of the first things Jon did was send me one of his students, Gaurav Garg, who served as architect in building our switch. Another, Neil Barrett, has been very valuable as well. It's been really great working with Washington University. They've helped us get started so we can stand on our own in ATM. The kind of work Jon and Jerry Cox are doing stands as a model for other universities in how universities can transfer concepts from the laboratory into the marketplace."

Turner administers a department that comprises 15 full-time faculty and supports about 200 undergraduate majors, 55 master's degrees students and 25 doctoral degree candidates. He teaches analysis of algorithms, a staple computer science graduate course, and design and analysis of switching systems, a new graduate course most closely related to his own research. He also has taught undergraduate data structures and the first-year computer programming course to undergraduates. "They're all a lot of fun," he says.

Project Zeus — the only ATM research project on a university campus — is testing an array of applications, and Turner's eyes twinkle when he talks about them. "There are lots of great applications being explored here right now," he says, citing projects with the biology department (optical sectioning microscopy), earth and planetary sciences (the NASA Geoscience Node, which can transmit stunning planetary images), Olin Library and the School of Medicine Library, to mention a few.

The School of Medicine Library has put the Washington University Medical Handbook on-line, and the vision there is to extend the basic components of the handbook beyond text and graphics to include photographs and video so that users may be able to click a button for a document and draw up a video on a workstation window. Such a window would allow the actual procedures of an open heart surgery to be displayed alongside a traditional text and graphics. To show that Project Zeus is not the domain solely of science, Turner cites plans the School of Architecture has for its urban design students. To comprehend what a restructuring of a renovated urban area might conceptually look like, urban design students will be able to manipulate 3-D city models on their terminals and ultimately transmit them across the network to each other or even to architects at HOK, a major national architectural firm locted in St. Louis. While the School of Architecture program is not on the network yet, Turner says Project Zeus will be able to implement it in a couple of years.

In less than a year, Turner predicts, about 50 computer workstations on campus will be involved with Project Zeus and eventually better than half of the thousands of computers here will be on-line. The technology he has nurtured will be capable of implementing multimedia conferencing and transmitting multimedia documents, but also will be used in ways not even Turner can envision.

"There's no end to the applications," he says. "It's not easy to anticipate them. Most will surprise us when they come along."

— Tony Fitzpatrick

Calendar

April 1–10

Exhibitions

Master of Fine Arts Thesis Exhibition I. Opening: 5-7 p.m. April 9. Exhibit continues through April 18. Gallery of Art, upper gallery, Steinberg Hall. Hours: 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends. For more info., call 935-6597.

First-year Master of Fine Arts Exhibition. Opening: 6-8 p.m. April 2. Exhibit continues through April 18. Pierce Arrow Bldg., 4814 Washington Ave., second floor. Hours: 10 a.m.-5 p.m. Saturdays; 2-5 p.m. Sundays. For more info., call 935-6500.

School of Fine Arts Junior Exhibit. Opening: 5-7 p.m. April 2. Exhibit continues through April 18. Bixby Gallery, Bixby Hall. Hours: 10 a.m.-4 p.m. weekdays; 1-5 p.m. weekends. For more info., call 935-4643.

"Perspectives: Jarvis Thurston and Mona Van Duyn." Through May 7. Olin Library, Special Collections, Level 5. Hours: 8:30 a.m.-5 p.m. weekdays. For more info., call 935-5495.

"Washington University Art Collections — 19th- and 20th-century European and American Artists." Through May. Gallery of Art, lower gallery, Steinberg Hall. Hours: 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends. For more info., call 935-4523.

"Bodies, Bones and Belligerence: China Perceived by Westerners, 1914-1941." Through May 28. Glaser Gallery, seventh floor, School of Medicine Library. Hours: 8 a.m.-10 p.m. weekdays; 1-6 p.m. weekends. For more info., call 362-4239.

"Goddesses, Queens and Women of Achievement on Coins and Medallions From the Wulfing and Bixby Collections." Through July 3. Gallery of Art, lower gallery, Steinberg Hall. Hours: 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends. For more info., call 935-4523.

Films

Thursday, April 1

7 p.m. Dept. of Asian and Near Eastern Languages and Literatures Japanese Film Series presents "Woman in the Dunes" (English subtitles). Room 219 South Ridgley Hall.

Friday, April 2

7 and 9:30 p.m. Filmboard Feature Series presents "Impromptu." (Also April 3, same times, and April 4, 7 p.m.) Room 100 Brown Hall. Cost: $3. **For 24-hour Filmboard hotline, call 935-5983.**

Midnight. Filmboard Midnight Series presents "The Gods Must be Crazy." (Also April 3, same time, and April 4, 9:30 p.m.) Room 100 Brown Hall. Cost: $3.

Monday, April 5

7 and 9 p.m. Filmboard Classic Series presents "A Midsummer Night's Dream." (Also April 6, same times.) Room 100 Brown Hall. Cost: $3.

Thursday, April 8

7 p.m. Dept. of Asian and Near Eastern Languages and Literatures Chinese Film Series presents "Red Sorghum" (English subtitles). Room 219 South Ridgley Hall.

Friday, April 9

7 and 9:30 p.m. Filmboard Feature Series presents "My Life As A Dog" (Swedish with English subtitles). (Also April 10, same times, and April 11, 7 p.m.) Room 100 Brown Hall. Cost: $3.

Midnight. Filmboard Midnight Series presents "Betty Blue" (French with English subtitles). (Also April 10, same time, and April 11, 9:30 p.m.) Room 100 Brown Hall. Cost: $3.

Lectures

Thursday, April 1

Noon. Dept. of Molecular Biology and Pharmacology lecture, "Stimulation-induced Metabolic Changes in Hippocampal Slices," David B. McDougal Jr., prof., Dept. of Molecular Biology and Pharmacology, WU School of Medicine. The Philip Needleman Library, Room 3907 South Bldg.

Noon. Dept. of Molecular Genetics, "Involvement of Tyrosyl-tRNA Synthetase and Other Proteins in Splicing of Group I Introns," Alan Lambowitz, Dept. of Molecular Genetics, Ohio State U. Cori Aud., 660 S. Euclid Ave.

1 p.m. Division of Biology and Biomedical Sciences Student-sponsored Seminar, "The Control of Timing and Spatial Organization During Cellular Differentiation," Lucy Shapiro, prof. and chair, Dept. of Developmental Biology, Stanford U. Clopton Aud., 4950 Children's Place.

4 p.m. African and Afro-American Studies and American Culture Studies present a lecture, "Gordon Parks: From Regionalist to Man of the World," Thomas Cripps, prof. of history, Morgan State U., Baltimore. Brown Hall Lounge.

4 p.m. Central Institute for the Deaf Research Seminar, "Distortion Product Otoacoustic Emissions: New Information on Rate of Growth and Related Clinical Issues," Gerald R. Popelka, prof. and head of audiology, CID. Second Floor Aud., CID Clinic Research Bldg., 909 S. Taylor Ave.

4:15 p.m. Dept. of Philosophy colloquium, "De Facto Determinancy of Translation," John Michael Palmer, graduate student, WU. Women's Bldg. Lounge.

4:30 p.m. Dept. of Mathematics Roever Colloquium, "Dupin Hypersurfaces," Thomas E. Cecil, prof., College of the Holy Cross, Worcester, Mass. Room 199 Cupples I Hall. (Tea: 4 p.m., Room 200.)

7:30 p.m. Committee on Comparative Literature and Dept. of Romance Languages and Literatures present a lecture, "Writing the Fourth Dimension (the European Avant-garde)," Willard Bohn, prof. of French and comparative literature, Illinois State U., Normal. Alumni House, 6510 Wallace Circle.

Friday, April 2

9:15 a.m. Dept. of Pediatrics presents the Sixth Ben Abelson Memorial Lecture, "Human Cancer Genetics," Webster K. Cavenee, director, Ludwig Institute for Cancer Research, San Diego; and prof. of medicine, U. of California, San Diego. Clopton Aud., 4950 Children's Place.

Noon. Dept. of Cell Biology and Physiology seminar, "Macropinosomes, Tubular Lysosomes and *Salmonella* in Macrophages," Joel A. Swanson, Dept. of Anatomy, Harvard Medical School. Room 423 McDonnell Medical Sciences Bldg.

1 p.m. Dept. of Mathematics Geometry Seminar, "Applications of Lie Sphere Geometry to Submanifold Theory," Thomas E. Cecil, prof., College of the Holy Cross, Worcester, Mass. Room 199 Cupples I Hall.

1 p.m. Solid-state Engineering and Applied Physics seminar, "More on Information Theory for Magnetic Recording," Donald Porter, graduate student, Dept. of Electrical Engineering. Room 305 Bryan Hall.

3 p.m. Dept. of Mathematics Analysis Seminar, "Parabolic Commutators and Layer Potential," Steve Hofmann, prof., Wright State U., Dayton. Room 199 Cupples I Hall.

4 p.m. Dept. of Anatomy and Neurobiology seminar, "Representation of Tactile Roughness From Thalamus to Somatosensory Cortex," Harold Burton, prof. of neurobiology and assoc. prof. of physiology, WU School of Medicine. Room 928 McDonnell Medical Sciences Bldg.

4 p.m. Dept. of Earth and Planetary Sciences colloquium, "Earth Before Pangea," Ian Dalziel, prof., Dept. of Geological Sciences, U. of Texas, Austin. Room 361 Natural Sciences Bldg.

4 p.m. Microbial Pathogenesis Seminar, "Pathogenesis and Immunity of CNS Virus Infection — What Have Reoviruses Taught Us?" Kenneth L. Tyler, Dept. of Neurology, Medicine and Microbiology-Immunology, U. of Colorado Health Science Center. Room 775 McDonnell Medical Sciences Bldg.

6 and 8:30 p.m. WU Association Travel Lecture Series, "Bali: Life in the Balance" by Rick Ray, whose travel adventures include riding the rails in New Zealand, living in a Buddhist monastery in Thailand and backpacking through China. Graham Chapel. Cost: $4.50 at the door. For more info., call 935-5212.

Monday, April 5

2 p.m. Dept. of Chemical Engineering seminar, "The Kinematics of Mixing," Julio Ottino, prof., Northwestern U., Evanston, Ill. Room 100 Cupples II Hall. (Coffee: 1:45 p.m.)

4 p.m. Graduate Program in Immunology seminar, "Development of T Helper Subsets in an α/ß TCR Transgenic System," Kenneth M. Murphy, asst. prof., Dept. of Pathology, WU School of Medicine. Third Floor Aud., St. Louis Children's Hospital, 400 S. Kingshighway.

8 p.m. School of Architecture Monday Night Lecture Series with Rodolfo Machado, principal architect, Boston Machado Silvetti. Steinberg Hall Aud. For more info., call 935-6200.

Tuesday, April 6

Noon. Radiology Research Division Brown Bag Seminar, "Computed CT and Metabolic Studies of Spare Tires, Love Handles and Fat," Wade Martin, asst. prof., Dept. of Medicine, WU School of Medicine. Room 482 Old Children's Hospital.

12:10 p.m. Program in Physical Therapy Brown Bag Research Seminar, "Influence of Growth Factor on the Survival of Peripheral Neurons," William Snider, assoc. prof., Dept. of Neurology, WU School of Medicine. Steven J. Rose Conference Room, third floor, Room 3400 East Bldg.

Wednesday, April 7

8 a.m. Dept. of Obstetrics and Gynecology Grand Rounds, "The Politics of Prolapse," Michael Heit, urogynecology fellow, Rush St. Luke's Presbyterian Hospital, Chicago. Clopton Aud., 4950 Children's Place.

4 p.m. Dept. of Biochemistry and Molecular Biophysics seminar, "Role of Protein Conformational Changes, Surface Catalysis and Protein Cofactors in Heparin-accelerated Antithrombin-proteinase Reactions," Steven T. Olson, Division of Biochemical Research, Henry Ford Hospital, Detroit. Cori Aud., 660 S. Euclid Ave.

4 p.m. Dept. of Physics colloquium, "Ultrasonics in Arteries and Atherosclerosis," Samuel Wickline, asst. prof., Dept. of Medicine, WU School of Medicine. Room 204 Crow Hall. (Coffee: 3:30, Room 245 Compton Hall.)

7:30 p.m. School of Fine Arts and St. Louis Volunteer Lawyers and Accountants for the Arts present a lecture, "First Amendment and Artistic Expression," Dennis Barrie, former director, Cincinnati Contemporary Arts Center. Steinberg Hall Aud. For more info., call 935-6597.

Thursday, April 8

Noon. Dept. of Biochemistry and Molecular Biophysics seminar, "Theoretical Aspects of Protein Folding," Harold A. Scheraga, Dept. of Chemistry, Cornell U., Ithaca, N.Y. Room 2918 South Bldg.

1:10 p.m. George Warren Brown School of Social Work lecture, "Maintaining a Family-centered Focus in Child Welfare," Ann Hartman, dean, Smith College, School for Social Work, Northampton, Mass. Brown Hall Lounge.

4 p.m. Assembly Series presents the Thomas Hall Lecture, "A Brave, New, Healthy World: Social Medicine and Scientific Humanism in the 20th Century," Dorothy Porter, historian of medicine, University of London. Room 215 Rebstock Hall.

4 p.m. Dept. of Russian lecture, "Love as 'Random Walk' in Turgenev's Fiction," Joan Grossman, prof. of Russian, U. of California, Berkeley. Women's Bldg. Lounge.

4:15 p.m. Dept. of Philosophy colloquium, "Shaping Feminist Culture," Virginia Held, prof. of philosophy, Hunter College and Graduate School, Columbia U., New York. Alumni House, 6510 Wallace Circle.

4:30 p.m. Dept. of Mathematics colloquium, "Cauchy Transforms and Noncommutative Probability," Hari Bercovici, prof., Indiana U., Bloomington. Room 199 Cupples I Hall. (Tea: 4 p.m., Room 200.)

Friday, April 9

9:15 a.m. Pediatric Grand Rounds, "New Drugs on the Block — The Mechanism(s) of Action of Anticonvulsants," Steven M. Rothman, A. Ernest and Jane G. Stein Professor of Developmental Neurology, WU School of Medicine; and director, Division of Pediatric Neurology, St. Louis Children's Hospital. Clopton Aud., 4950 Children's Place.

Noon. Dept. of Cell Biology and Physiology seminar, "Clathrin Assembly Protein AP 180: An Analysis of Primary Structure and Function," Ernst Ungewickell, assoc. prof., Dept. of Pathology, WU. Room 423 McDonnell Medical Sciences Bldg.

4 p.m. Jewish and Near Eastern Studies, Literature and History program and Religious Studies Committee lecture, "Jewish Christians and Christian Jews in the 17th Century," Richard H. Popkin, professor emeritus of philosophy, WU. Cohen Lounge, Room 113 Busch Hall.

Music

Thursday, April 1

8 p.m. Dept. of Music presents a voice recital with Roland Jarquio, baritone. Graham Chapel.

Calendar guidelines

Events sponsored by the University — its departments, schools, centers, organizations and its recognized student organizations — are published in the Calendar. All events are free and open to the public, unless otherwise noted.

Calendar submissions should state time, date, place, sponsor, title of event, name of speaker(s) and affiliation, and admission cost. Quality promotional photographs with descriptions are welcome. Send items to Marie Doss at Box 1070 (or via fax: 935-4259). Submission forms are available by calling 935-8533.

The deadline for all entries is noon Tuesday one week prior to publication. Late entries will not be printed. The Record is printed every Thursday during the school year, except holidays, and monthly during the summer. If you are uncertain about a deadline, holiday schedule, or any other information, please call 935-8533.

Sunday, April 4

8 p.m. Dept. of Music presents "An Evening of Chamber Music" with concertmaster André Cárdenes, Pittsburgh Symphony Orchestra; violinist Manuel Ramos, St. Louis Symphony Orchestra; and friends of the St. Louis Symphony Orchestra. Graham Chapel. Cost: $5 for the general public; free for students, Friends of Music and WU faculty and staff. For more info., call 935-5581.

Tuesday, April 6

8:30 p.m. Dept. of Music presents the WU Chamber Orchestra concert with conductor Seth Carlin; violinist Anne Nagosky; and oboist Dedra Foote. Women's Bldg. Lounge.

Wednesday, April 7

8 p.m. Dept. of Music presents the WU Jazz Band concert, directed by Chris Becker. The Gargoyle, Mallinckrodt Center.

Saturday, April 10

8 p.m. Dept. of Music presents the WU Chorus concert, directed by Robert Ray. Graham Chapel.

Performances

Thursday, April 1

7 p.m. Performing Arts Dept. presents a special preview of "A Little Night Music" by Stephen Sondheim. (This preview is exclusively for Eliot Society members and their guests.) Edison Theatre. For more info., call 935-5191. (Champagne dessert reception at intermission.)

Friday, April 2

8 p.m. Performing Arts Dept. presents "A Little Night Music" by Stephen Sondheim. (Also April 3, 9 and 10, same time; April 4 and 11, 2 p.m.) Edison Theatre. Cost: $7 for the general public; $5 for students, senior citizens and WU faculty and staff. For more info. and reservations, call 935-6543.

Saturday, April 3

8 p.m. Stage Left presents El Teatro Campesino performing two plays: "Simply Maria" and "How Else Am I Supposed to Know I'm Still Alive." (Also April 4, same time.) Drama Studio, Room 208 Mallinckrodt Center. Cost: $12 for the general public; $10 for senior citizens and WU faculty and staff; $8 for students. For more info. and reservations, call 935-6543.

Miscellany

Thursday, April 1

8 p.m. International Writers Center and The New Theatre present "April Fools' Revue: An Evening of Humorous Literature" with Martha Baker, Harold Blumenfeld, Lorin Cuoco, William Gass, Steven Meyer and Agnes Wilcox. Off Broadway, 3509 Lemp. Cost: $1.

Friday, April 2

11 a.m. Thurtene is sponsoring a "Stuff-A-Volkswagen" contest for student organizations. Outside Umrath Hall's Umrathskellar. For more info., call 721-7198.

Noon. The Woman's Club of WU mini-luncheon and program, "Join the Kids on the Block!" presented by Margaret Israel. Women's Bldg. Lounge. Cost: $5 for members and guests. Reservation deadline is March 30. For more info. and reservations, call Annette Kimelman at 991-1261 or Jan Kardos at 863-0523.

7:30 p.m. Libraries' Bookmark Society presents a panel discussion, "The Art of Autobiography." Panelists are: Wayne Fields, dean, University College; Elaine Viets, columnist, St. Louis Post-Dispatch; and Elizabeth Gentry Sayad, public relations professional. Women's Bldg. Lounge. For more info., call 935-5400.

Saturday, April 3

10 a.m.-5 p.m. Printmarket benefit for WU Gallery of Art with art prints for sale. (Also April 4, noon-5 p.m.) Gallery of Art, upper gallery, Steinberg Hall. Cost: $5 for the general public; $2 for students. For more info., call 935-4523.

Monday, April 5

7:30 p.m. the Dept. of Germanic Languages and Literatures, European Studies Program and Goethe Institute of St. Louis present Elisabeth Borchers, poet, Frankfurt am Main, reading in German from her works. Stix International House, 6470 Forsyth Blvd. For more info., call 935-4784.

Thursday, April 8

4 p.m. Dept. of Asian and Near Eastern Languages and Literatures and the Teaching Center are sponsoring a presentation, "Computer-assisted Language Learning for Chinese: An Interactive Video Lesson," Ted Yao, prof., Mount Holyoke College, South Hadley, Mass. Room 219 South Ridgley Hall. For more info., call 935-4326.

9 p.m. Thurtene is sponsoring "Rat Nite" with Thurtene Buckets. Umrath Hall's Umrathskellar. For more info., call 935-3033.

Friday, April 9

10 a.m.-5 p.m. Dept. of Asian and Near Eastern Languages and Literatures and the Teaching Center present a field test, "Computer-adaptive Test for Reading Chinese," Ted Yao, prof., Mount Holyoke College, South Hadley, Mass. Arts and Sciences Macintosh Lab, Room 1 Prince Hall. For more info., call 935-4326.

Saturday, April 10

10:30 a.m.-noon. University College presents a short course, "Viewing Contemporary Dance," Annelise Mertz, professor emerita of dance, WU Performing Arts Dept. (Continues April 17, same time; April 22, 4:15 p.m.; April 24, 10:30 a.m.; and April 25, 2 p.m.) Cost: $75 (includes one ticket to Sunday performance); elementary, high school and college instructors may register for $40. For registration or more info., call 935-6788.

Lecture cancelled

The April 2 Department of Music lecture announced in last week's calendar has been cancelled. The lecture, titled "Controversy in the Biographies of Prokofiev, Tchaikovsky and Shostakovich," was scheduled for 4 p.m. in Room 8 Blewett.

Family-centered focus in child welfare urged

Ann Hartman, dean of Smith College's School for Social Work, will talk on "Maintaining a Family-centered Focus in Child Welfare" at 1:10 p.m. April 8 in the Brown Hall Lounge at the George Warren Brown School of Social Work. The event is free and open to the public.

Hartman, who also is the Elizabeth Marting Treuhaft Professor at Smith College in Northhampton, Mass., is a leading expert on child welfare issues. She speaks across the country on a variety of issues affecting child welfare practices and programs.

She is author of *Working With Adoptive Families: Beyond Placement*, and co-author of *A Handbook of Child Welfare: Context, Knowledge, and Practice* and *Empowering the Black Family.*

Hartman was awarded the Herman Stein Distinguished Social Work Educator Award at Case Western Reserve University in 1989.

She received her doctorate from Columbia University in 1972. She was honored with an honorary doctorate of humane letters from Tulane University in 1986.

For more information, call 935-6606.

International experts gather on campus to explore Middle East literary themes

Scholars, critics and theorists from around the world will meet on campus from April 2 to 4 for the 1993 Middle East Literary Seminar. The Center for the Study of Islamic Societies and Civilizations will host the seminar, which is an annual gathering of international experts on Middle East literatures.

The theme of this year's conference is "Hybrid Texts." According to Peter Heath, Ph.D., center director, the Middle East Literary Seminar has met annually since 1983 to discuss various literary themes. It is an ad hoc group, said Heath, that makes up in intellectual seriousness what it lacks in bureaucratic structure.

"It is distinguished by the intellectual strength of its participants' individual contributions as well as the informality, collegiality, and liveliness of the group discussions," said Heath.

Twelve papers will be presented at this year's conference, including "Murder She Wrote: The Israeli Mystery," by Nancy Berg, Ph.D., assistant professor of modern Hebrew literature and languages. Others presenting papers include scholars from Tel Aviv University, the American University in Cairo, Emory University and Yale University.

Heath encourages colleagues from other departments within the University to attend the seminar. The sessions run from 1 to 4:30 p.m. Friday, April 2, in the Alumni House; from 9 a.m. to 5 p.m. Saturday, April 3, in the Women's Building; and from 9 a.m. to 12:30 p.m. Sunday, April 4, also in the Women's Building.

For more information, call 935-5156.

Executives discuss operations management issues facing their industries in 21st century

"World Class Manufacturing: Operations Management Beyond Tomorrow" is the topic of a seminar scheduled for Friday, April 2, and Saturday, April 3, at the John M. Olin School of Business. The seminar will be held Friday afternoon and Saturday morning in the May Auditorium of Simon Hall.

Four senior executives at leading manufacturing firms will discuss important operations management issues facing their industries in the 21st century.

Friday's program begins at 1:30 p.m. and features Dean H. Kropp, Ph.D., the Dan Broida Professor of Operations and Manufacturing Management at Olin; Stephen B. Bransfield, general manager in the Lynn, Mass., manufacturing unit of GE Aircraft Engines; and A. Thomas Humphries, vice president and general manager with GRID Systems Inc. of Westlake, Texas. The afternoon closes with an informal reception at 4:45 p.m.

Saturday's schedule opens with an 8:30 a.m. continental breakfast. The program begins at 9 a.m. and features Robert O. Paulson, vice president of manufacturing at the Maytag Co. in Newton, Iowa; and Daniel G. Pyne, general manager, packaging division, Weyerhaeuser Paper Co. in Cedar Rapids, Iowa. It concludes with a lunch and informal discussion at noon.

Fees are $30 for the general public; $15 for University alumni; and $5 for business school students, faculty and staff. Registrations will be taken at the door as space permits, beginning at 12:30 p.m. April 2. For advance registration and other information, call the conference hotline at 935-9250.

The program is sponsored by the Operations and Manufacturing Management Club, a business school student organization.

Sports

Baseball

Last Week: Washington 7, Upper Iowa 7 (called after 11 innings — darkness); St. Louis University 14, Washington 2; St. Olaf 3-7, Washington 1-6; Washington 1, Simpson 0

This Week: Illinois College, 2 p.m. Wednesday, March 31, Kelly Field; Maryville University, 2 p.m. Friday, April 2, Kelly Field; Lindenwood College, noon Saturday, April 3, Kelly Field; Blackburn College (double-header), 1 p.m. Sunday, April 4, Carlinville, Ill.

Current Record: 8-9-1

Playing its most difficult stretch of games last week, Washington University's baseball team ended the treacherous portion of its schedule with a 1-0 victory over regional foe Simpson College, a participant in the last three NCAA tournaments. Junior pitcher Kirt Ervin, Highland, Ill., went the distance for the Bears, picking up his first collegiate shutout. Ervin scattered six hits and struck out seven, giving him a team-high 27 strikeouts. Sophomore outfielder Chad Towers, St. Charles, Mo., who leads the Bears with a .365 batting average, singled in the winning run with one out in the bottom of the ninth.

Men and Women's Track and Field

Last Meet: Washington University Twilight Open (non-scoring)

This Week: Principia Invitational, Saturday, April 3, Elsah, Ill.

The Red and Green played host to representatives from eight other schools in a sun-drenched invitational last Friday. Among the stellar showings in the non-scoring meet were a trio of winning performances by Washington University competitors. Freshman Julie Pearman, Desloge, Mo., dashed to victory in the grueling 400-meter hurdles (1:09.3); junior Tirzah Wilson, Benton Harbor, Mich., took top honors in the 100 meters (13.0); and freshman Ken Walker, Memphis, Tenn., leaped to a win in the triple jump (43' 6 1/4").

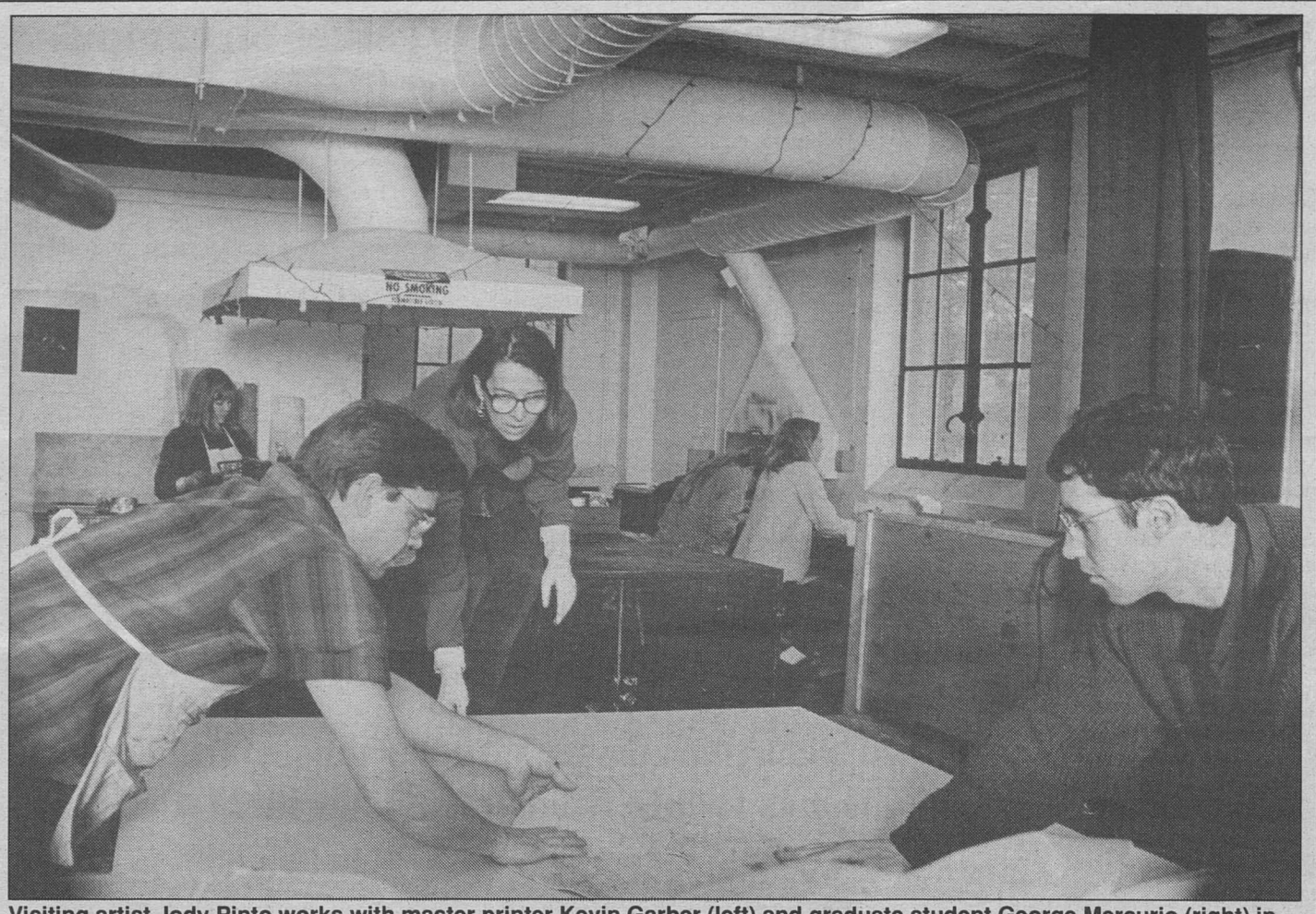
Women's Tennis

Last Week: Southwest Missouri State 5, Washington 4

This Week: William Woods, Tuesday, March 30, 3:30 p.m., Washington University's Tao Tennis Center.

Current Record: 1-3

The Bears had trouble at the top, dropping matches in the first- through fourth-singles competition and both the first- and second-doubles meetings in Saturday's 5-4 loss to Southwest Missouri. Providing the bright spots were sophomore Jenny Kaplan, Cincinnati, Ohio, and junior Stacy Leeds, Muskogee, Okla. Kaplan won at fifth singles, Leeds was victorious at sixth singles, and the two combined to win the third-doubles competition. Leeds extended her undefeated singles mark to 7-0.



Visiting artist Jody Pinto works with master printer Kevin Garber (left) and graduate student George Mercurio (right) in preparing a print in the collaborative print shop. The print shop, which is in the School of Fine Arts, hosts several visiting artists a year who create prints with the assistance of Garber and printmaking students.

Templeton's analysis shows that all modern humans are one — *from page 1*

very trivial issue, really. The more fundamental issue is: when is a gene tree a population tree, and how do you infer whether a gene tree has been influenced by population processes? This affects all of molecular biology and all the disciplines it involves. Gene trees and population trees are not necessarily the same thing."

A gene tree reflects the evolutionary history of a particular piece of DNA. A population tree, on the other hand, reflects the movement of entire groups of individuals and all the genes the groups carry simultaneously. The conclusion that all human mitochondrial DNA traces back to Eve does not necessarily imply that all humans today are descended only from the population in which Eve lived, Templeton stresses.

"For example, my recent ancestors came from Scotland, Ireland, Germany and the Netherlands," he explains. "My recent genetic roots are spread out over several countries and are not limited to one geographical location. Yet any particular gene I have will trace back to only one of these countries. For example, my mitochondrial DNA definitely came from Germany, the origin of my maternal grandmother's mother. However, my Y chromosome (inherited from father to son) came from Scotland where my paternal grandfather lived. Hence, different genes can have different geographical origins. This is why gene trees and population trees are not necessarily the same thing. The Wilson group automatically assumed their tree was a population tree, when it was in fact a gene tree.

"You have to do the really hard work of rigorous data analysis to see if a gene tree does have a population level encoded into it. If, out of this controversy, we can all understand that and the importance of rigorous data analysis, we will have benefited."

According to Sussman, the special issue of American Anthropologist is part of what the journal calls its Contemporary Issues Forum. The forum is designed to open up anthropology to issues of modern relevance, and it brings together researchers from divergent disciplines. Other papers in the forum examine different aspects of human origins.

"Basically the forum asks: 'If Eve doesn't work, then what is the next best argument?'" says Sussman. "It appears that Templeton has knocked out the Eve hypothesis, but there will be some dissenting ideas."

The plausibility of Eve's existence at any point in history can only be pinpointed through painstaking computer analyses of the way just four basic chemicals called basepairs are arranged and the rate at which they mutate, denoting the passing of time.

In his paper, Templeton takes the Wilson group's methods of basepair analysis to task and offers his own analysis of the same data using a spin-off of a genetics computer program he wrote called GEODIS — for geographical distribution. He stresses the importance of examining a geographical population expansion out of Africa, a central sub-hypothesis to the Eve hypothesis, but one that he says the Wilson group never tested.

GEODIS has the statistical power to detect population range expansion and can detect associations between geographical locations of DNA samples and branches of those samples. He spent the fall of 1992 on sabbatical at Oxford University, England, expanding and refining his program so that now it may be used for plant, animal and human genetic analyses.

The Eve proponents used a computer program called Phylogenetic Analysis Using Parsimony (PAUP), a powerful statistical analysis that seeks to find the genetic tree out of all the samples that is the most parsimonious, one containing the fewest genetic mutations, and thus easier to analyze. The researchers entered the data, and, from its first run, claimed the tree that arose was the mitochondrial tree rooted in Africa. But, Templeton claims, they didn't use the PAUP program properly.

"Generally, you have to use PAUP to explore all the possibilities of reconstruction," he says. "As a result of analyzing just one run, they fooled themselves into thinking they had a well-resolved evolutionary tree."

Templeton and a colleague ran the PAUP program and found there were thousands and thousands of equally more parsimonious trees that didn't support Eve's African roots.

Templeton's analysis shows: (1) the geographical origin of the mitochondrial ancestor (Eve) is ambiguous; (2) the time range during which she existed is broad, likely more than 200,000 years ago; (3) the mitochondrial tree shows only very recent and geographically limited range expansions of Old World human populations as well as slight though recurrent gene flow between continents; and (4) mitochondrial and nuclear DNA support the theory that all Old World human populations have mixed genes, and that there is no single source population for all human genetic variations.

'I'm from everywhere, man'

In effect, Templeton shows that modern humans can be reflected in a line from a Woody Guthrie folk song: "I'm from everywhere, man."

"My analysis says that the root of humanity is all over, and that all modern humans are one," he states. "In the long-term, there is no difference if the root of a particular DNA sequence is in Africa, Europe or Asia. That root and its descendants can spread throughout all of humanity by ordinary gene flow — individuals moving a little bit each generation, maybe just mating with somebody over the hill."

There will still be those who claim the relevance of the mitochondrial DNA root being in Africa. Templeton is ready for the ensuing fracas.

"Suppose the proof comes one day — and it might — that the mitochondrial DNA gene tree really is rooted in Africa," he poses. "On another level, I would say, 'Well, so what?' That root is spread throughout all of humanity through gene flow. Where did the Y chromosome come from? It may have come from Asia, Europe or Africa, but it doesn't make any difference. Where did the genes affecting cholesterol come from? Maybe Asia. Throughout evolutionary time, all of these genes got scrambled up, and current humanity really reflects this scrambling process."

— Tony Fitzpatrick

University to reinstate cross country programs beginning 1993-94

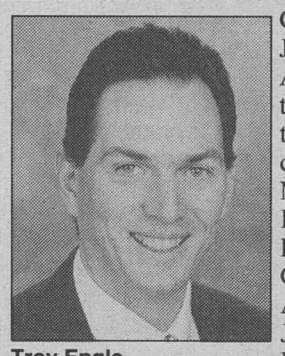
Washington University will reinstate men and women's cross country to its intercollegiate varsity program, effective with the start of the 1993-94 academic year, according to John Schael, director of athletics. Both programs return following a one-year absence.

Washington University cross country teams have enjoyed significant local and regional success in the recent past. Both the men and women's squads spent time among the nation's top 20 in the NCAA Division III rankings in the late 1980s and early 1990s and the women's team captured University Athletic Association titles in 1989 and 1990.

With the reinstatements, Washington University will field nine men's and eight women's intercollegiate teams.

Schael also announced that cross country coaching duties will be handled by Troy Engle, the Bears' current head men and women's track and field coach. Engle joined the Washington staff in December 1992. Prior to his appointment, Engle served as both head men's cross country coach and head men's track and field coach at Swarthmore (Pa.) College from July 1991 through December 1992.

Previously, Engle had served as provincial sports and recreation officer for the Manus Province in Papua New Guinea from June 1987 to April 1989. He then became track and field coach of the National Sports Institute of Papua New Guinea from April 1989 to June 1991.



Troy Engle

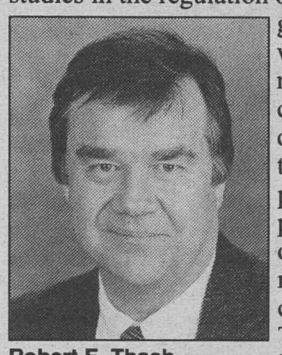
Engle's first coaching stint was at Amherst College, where he served as assistant coach of men and women's track and cross country from September 1984 to May 1985.

An accomplished competitor, Engle was a U.S. National Track and Field member in 1984. He placed sixth in the 50-kilometer walk in the 1984 U.S. Olympic Trials, as well as 11th in the 20K walk. From July 1983 to August 1984, Engle was a permanent resident of the U.S. Olympic Training Center in Colorado Springs, Colo.

Biologist Thach elected AAAS fellow

Robert E. Thach, Ph.D., professor of biology, has been elected to the rank of fellow by the American Association for the Advancement of Science (AAAS). The association bestows the honor to members whose "efforts on behalf of the advancement of science or its applications are scientifically or socially distinguished." The honor began in 1874 and is acknowledged with a certificate and a rosette.

Thach was named a fellow for his studies in the regulation of translation, a genetic process whereby the messages encoded in the cell's DNA are transformed into proteins. These proteins give organisms their multitude of characteristics. Thach has made key contributions to the understanding of how the cell regulates this process. His work has provided new ways of looking at a variety of human diseases as well as some cancers.



Robert E. Thach

Thach graduated summa cum laude from Princeton University with a bachelor's degree in chemistry in 1961 and received his doctorate in biochemistry from Harvard University in 1964. Before coming to Washington University as associate professor of biology in 1970, Thach was associate professor of biochemistry and molecular biology at Harvard University. Since 1972, he has held the position of professor of biological chemistry at the School of Medicine as well as faculty member of the Washington University Department of Biology. He was named professor of biology in 1977.

Thach was chair of the biology department from 1977 to 1981. From 1972 to 1977, he was director of the Center for Basic Cancer Research at Washington University; from 1974 to 1977 he was Washington's director of the Graduate Program in Molecular Biology. Since 1983, Thach has served as coordinator of the Program for Special Major in Biochemistry and Molecular Biology.

Thach has authored or co-authored nearly 100 technical papers. In addition to membership in AAAS, he also is a member of the American Society of Biological Chemists and the American Society for Virology.

Parking lot reserved for April Welcome

Portions of Lot 9, south of Brown Hall, will be reserved during April Welcome, according to Gary L. Sparks, director of the Transportation Department.

The University apologizes for the inconvenience.

For The Record

For The Record contains news about a wide variety of faculty, student and staff scholarly and professional activities.

Of note

Eleni Bastéa, Ph.D., assistant professor of architecture, received a 1993 New Faculty Teaching Award from the Association of Collegiate Schools of Architecture and the American Institute of Architecture Students. The award, which recognizes "demonstrated excellence in teaching performance during the formative years of an architectural teaching career," is presented annually to three faculty members from accredited architecture schools in the United States and Canada. …

Sergio Fenley, Ph.D., assistant professor of mathematics, received a National Science Foundation Postdoctoral Fellowship. During the next two academic years, he will conduct research at the Mathematical Sciences Research Institute in Berkeley, Calif. He will study the topology of three-dimensional manifolds. **Gary R. Jensen**, Ph.D., professor and chair of mathematics, will spend the 1993 fall semester at the institute, where he will conduct research and participate in Professor Shiing-Shen Chern's seminar on the differential geometry of submanifolds. …

Carol A. Larson, a freshman majoring in psychology, received a $1,250 scholarship from the International Association of Plastics Distributors. The scholarship is based on a combination of need, academic achievement, University activities and community service. …

During the fifth annual conference of the Association for Student Judicial Affairs, **John W. Lowry**, coordinator of judicial affairs in the Office of Student Affairs, was named Young Professional of the Year. The conference was held in Clearwater Beach, Fla. …

John Nobel, a graduate student in architecture, won the first-place prize of $5,000 in the "Masonry 92: Closing the Gap" design competition co-sponsored by the International Masonry Institute and the American Institute of Architecture Students. A total of 130 students and interns, representing 40 schools, took part in the competition. …

Mitchell Taibleson, Ph.D., professor of mathematics, received an Erskine Fellowship to spend three months during summer 1994 lecturing at the University of Canterbury in Christchurch, New Zealand. The fellowship, which the university administers, is named after John Angus Erskine, who was an engineering student at Canterbury. He bequeathed a fortune in mineral shares to the university to attract "distinguished overseas scholars in science, engineering and commerce."

Speaking of

Dorothy F. Edwards, Ph.D., assistant professor of occupational therapy, gave a Geriatric Medicine Grand Rounds Seminar titled "Quality of Life: An Empirical Approach" at the Louisiana State University School of Medicine in New Orleans. …

Edwin B. Fisher Jr., Ph.D., professor of psychology and director of the Center for Health Behavior Research, and **Dennis Y. Loh**, M.D., professor of medicine, associate professor of genetics and assistant professor of molecular microbiology, gave presentations during the Asthma and Allergic Disease Research meeting held in Bethesda, Md. Fisher spoke on "Neighborhood Asthma Coalition: A Community Organization Approach to Chronic Disease Management." Loh's talk was titled "Oral Tolerance." The National Institutes of Health sponsored the meeting. …

During the American Chemical Society's 205th national meeting held in Denver, Colo., **Umashanker Sampath**, Ph.D., postdoctoral research associate in chemistry, presented a paper titled "Synthetic Ribonucleases: DNA With Pendant Cu(II) Terpyridine Complexes for the Site-specific Non-oxidative Cleavage of RNA." …

During the annual meetings of the Central States Anthropological Society held in Beloit, Wis., **Murray L. Wax**, Ph.D., professor of anthropology, spoke on "The Anthropologist as Old Man Coyote." He spoke during a memorial session for Robert K. Thomas, a Cherokee Indian and anthropologist who worked to preserve his culture. …

Kristin E.S. Zapalac, Ph.D., assistant professor of history, delivered a paper titled "Kaiser, Keuschheit, Körper: En-Gendering Virtue in Sixteenth-century Nuremberg" during a conference on "Acts of Resistance: Culture and Power in Early Modern Nuremberg." Cornell University's Institute for German Cultural Studies sponsored the conference, which was held at the university in Ithaca, N.Y.

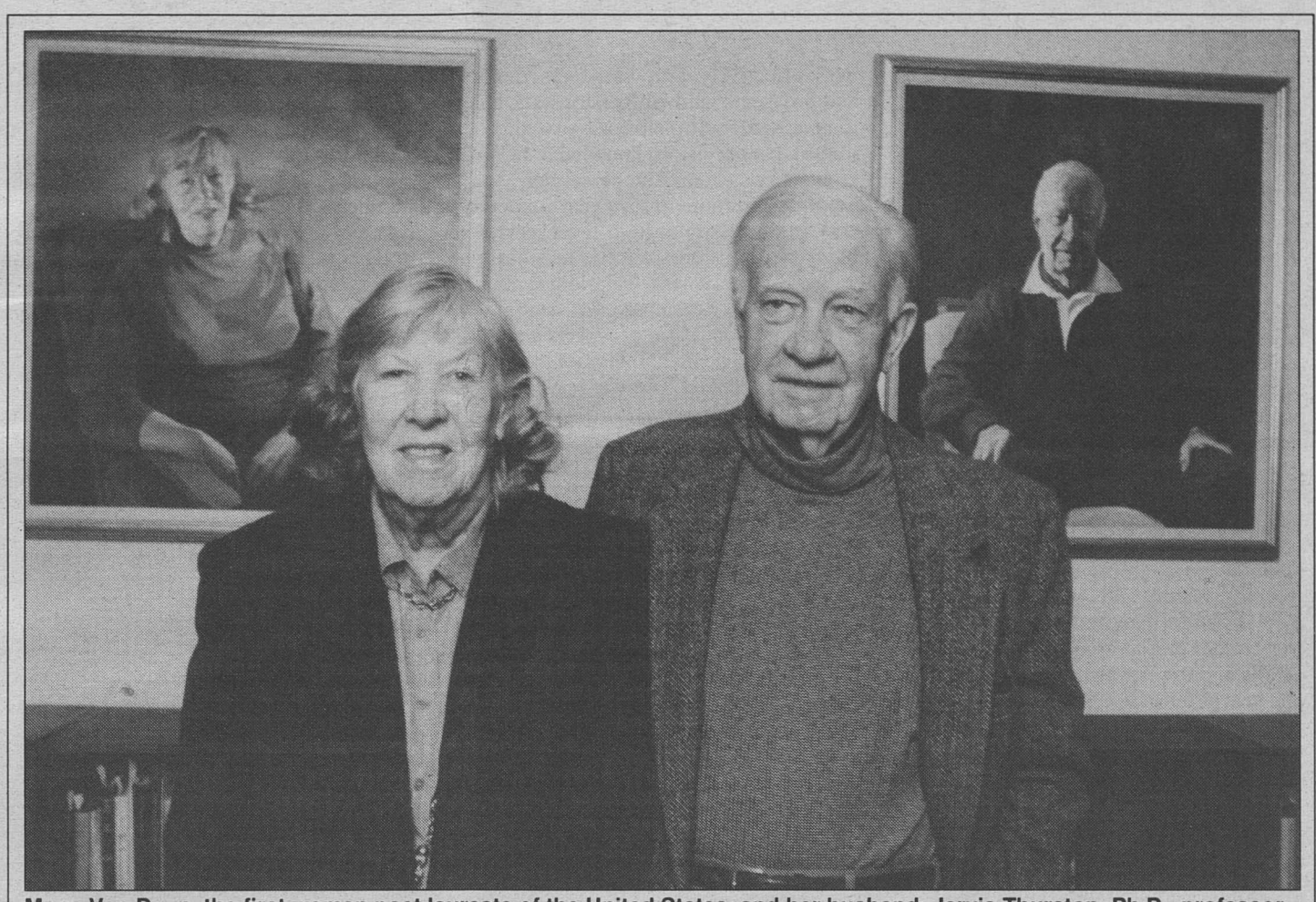
On assignment

Ida H. Early, director of special projects, information and foundations in the John M. Olin School of Business, was elected to a two-year term on the Association of Junior Leagues International Inc.'s board of directors. She will begin her term during the association's annual conference to be held April 21 in St. Louis. …

Steven G. Krantz, Ph.D., professor of mathematics, was elected to the American Mathematical Society Council as a member-at-large. The council is the society's governing body. Krantz will attend his first council meeting on April 17 in Washington, D.C.

Guidelines for submitting copy:

Send your full name, complete title, department, phone number, and highest-earned degree, along with a typed description of your noteworthy activity to For The Record, c/o Carolyn Sanford, Campus Box 1070. Items must not exceed 75 words. For information, call Carolyn Sanford at 935-5293.



Mona Van Duyn, the first woman poet laureate of the United States, and her husband, Jarvis Thurston, Ph.D., professor emeritus of English, stand in front of their portraits that recently were installed in Olin Library's Department of Special Collections on the fifth floor. A library exhibit of the couple's works, titled "Perspectives: Jarvis Thurston and Mona Van Duyn," is on display in special collections through May 7.

Professor Gertrude Knelleken dies at 70

Gertrude Knelleken, an associate professor emeritus of physical education who had a 35-year association with Washington University, died March 19 of cancer at her home in Bloomington, Ind. She was 70.

Knelleken began her tenure at Washington University in 1951, when she became assistant professor of education in the graduate and undergraduate programs. She came to St. Louis after a three-year stint at Eastern Oregon College in La Grande, Ore.

In addition to her instructional duties, Knelleken also served as the University's assistant dean of students from 1961-67, as director of the women's division of physical education from 1971-76, and as chair of the Department of Physical Education from 1976-79. In 1979, she was promoted to associate professor of physical education. She retired in 1986.

"Gertrude Knelleken was a true professional in physical education," said Lynn Stockman Imergoot, assistant director of athletics. "She sincerely cared about both the students and the faculty members with whom she interacted. Gertrude was always available to offer suggestions to improve instruction and to provide the best possible experience for students."

Knelleken received a bachelor's degree in education from Indiana University in 1944, and a master's degree in the same field from the University of Iowa in 1946. In 1981 she received the Helen Manley Award for Service to the profession from the Missouri Association of Health, Physical Education, Recreation and Dance. For many years, she was on the board of the Campus Y.

A funeral service was held March 22 at the University Lutheran Church in Bloomington. There are no immediate survivors.

Memorial contributions may be made to the University Lutheran Church, 607 E. 7th Street, Bloomington, Ind. 47408, or to the Bloomington Hospice at Bloomington Hospital, Bloomington, Ind. 47408.

Services held for Kathleen Winters

Memorial services were held March 24 at Second Presbyterian Church for Kathleen Winters Hernandez, M.D., assistant professor of clinical pediatrics. Winters died March 16 of lung cancer at her home in University City. She was 66.

Winters joined the School of Medicine in 1959 as a clinical instructor of pediatrics after completing her residency at St. Louis Children's Hospital. That same year, she also was appointed a pediatrician at the Central Institute for the Deaf and began her private practice.

Winters was a member of several professional organizations, including the American Medical Society, the American Academy of Pediatrics and the St. Louis Pediatric Society. She also co-authored professional articles.

A native of Florence, S.C., Winters graduated from Winthrop College in Rock Hill, S.C., in 1947 and in 1955, received her medical degree from the Medical College of South Carolina in Charleston.

For 26 years she was married to Dr. Antonio Hernandez Jr., a pediatric cardiologist at Children's Hospital. He died in 1986.

Among the survivors are a daughter, Allison Landes of Toronto; a son, Guy Hernandez of University City; her father, J.F. Winters of Florence, S.C.; and a sister, Ellen Nestico of Bristol, Conn.

Memorial contributions may be made to Second Presbyterian Church, 4501 Westminster Place, St. Louis, Mo. 63108, or to the Antonio Hernandez Jr. Memorial Fund at Washington University.

Campus Authors

The following is a recent release available at the Campus Bookstore in Mallinckrodt Center on the Hilltop Campus or at the Washington University Medical Bookstore in the Olin Residence Hall. For more information, call 935-5500 (Hilltop Campus) or 362-3240 (Medical School).

Teachers: The Missing Voice in Education is the title of a new book co-authored by **Marilyn M. Cohn,** Ph.D., director of teacher education at Washington University, and Robert B. Kottkamp, associate professor in the Department of Administration and Policy Studies at Hofstra University. The book examines stability and change in the teaching profession by comparing contemporary teachers' work and orientations with those identified in Dan Lortie's 1975 book titled *Schoolteacher.* Based upon a research study integrating interviews and surveys, Cohn's work provides direct access to classroom-based perspectives and teacher voices missing from contemporary debates on educational reform. (State University of New York Press, Albany)

Opportunities & personnel news

Hilltop Campus

The following is a list of positions available on the Hilltop Campus. Information regarding these and other positions may be obtained in the Office of Human Resources, Room 126 North Brookings Hall, or by calling 935-5990.

Secretary - Lewis Center

930152. *School of Fine Arts.* Requirements: High school graduate, some college preferred; typing 50 wpm with accuracy; accurate word processing; familiarity with WordPerfect 5.1; excellent language and grammar skills; knowledge of office machines, including personal computers; good communication skills; excellent filing and recordkeeping; ability to work well with students, faculty and staff; dependability and flexibility a must; willingness to work under pressure; ability to handle details and to prioritize tasks; minimum one year prior office experience; familiarity with University procedures preferred. Clerical tests and three letters of recommendation required.

Department Secretary

930154. *Alumni and Development Programs.* Requirements: High school graduate, bachelor's degree preferred; strong command of the English language; ability to deal with multiple priorities with minimal supervision. Overtime, including nights, weekends, etc. is essential, as are a good personality and good grooming. Clerical tests and three letters of recommendation required.

Library Assistant

930157. *School of Business.* Requirements: Two years of college, bachelor's degree preferred; attention to detail; ability to interact well with library users; ability to explain and interpret library policies; ability to work independently with minimal supervision; typing 35 wpm with accuracy. Clerical tests and three letters of recommendation required.

Benefits Accounting Clerk III

930158. *Accounting Services.* Requirements: High school graduate; one year benefits accounting experience; six semester hours of accounting and at least six semester hours of additional accounting and/or business-related courses; or three years experience equivalent to an Accounting Clerk II at Washington University, plus three semester hours of accounting, with payroll experience; typing 35 wpm with accuracy. Clerical tests and three letters of recommendation required.

Systems Manager

930161. *Biology.* Requirements: Bachelor's degree, preferably in computer science. Will be administrator of department computing facility. Extensive knowledge in VAX/VMS and UNIX systems management and programming required; strong experience with Ethernet, Decnet and Apple Talk networking; expertise in relational data base systems; experience supporting Macintosh and PC systems; good interpersonal and organizational skills; ability to prioritize and function effectively with minimal supervision; familiarity with academic work environment highly desirable. Resume and three letters of recommendation required.

Coordinator

930162. *Alumni and Development Programs.* Requirements: Bachelor's degree; excellent oral communications and interpersonal skills; self-motivated with attention to detail; ability to pleasantly overcome objections and be effectively persuasive with prospects; able to work effectively with volunteers, donors and prospects, and University staff; able to deal with multiple priorities with minimal supervision; knowledge of University systems and personnel helpful; minimum of five years experience in university or high-level service industry or business setting; familiarity with word processing techniques; ability to analyze, condense confidential information on major prospects and provide concise documentation; typing 50 wpm preferred. Clerical tests and three letters of recommendation required.

Editorial Assistant

930164. *Anthropology.* Requirements: Bachelor's degree, preferably in anthropology or with courses in anthropology; editorial and office management experience essential. The editorial assistant should also be computer literate enough to use Windows software, like word processing and spread sheets, fluently. The editorial assistant should be familiar with facsimile machines and photoduplicators; typing with accuracy required. Clerical tests and three letters of recommendation required.

Research Technician

930173. *Biology.* Requirements: Bachelor's degree in biological sciences. The successful candidate will be responsible for conducting research at the bench. In addition, he or she will be entrusted with note keeping and maintenance of lab records and strain collections. Candidate should be conscientious, meticulous and careful. Resume and three letters of recommendation required.

Receptionist

930174. *Health Service.* Requirements: High school graduate; cooperative attitude essential; must be dependable, conscientious, cheerful, pleasant and eager to assist students on first encounter with Health Service; some knowledge of medical terms helpful; typing 30 wpm with accuracy. Clerical tests and three letters of recommendation required.

Lab Aide - Part-time

930175. *Biology.* Requirements: High school graduate; safe handling of biohazardous waste. Duties: glassware pickup and processing; housekeeping; media; run errands. Application and three letters of recommendation required.

Lab Aide Clerk - Part-time

930176. *Biology.* Requirements: High school graduate; general familiarity with computer terminals useful, but will train; capable of lifting 50 lbs. (animal food, mail bags); valid driver's license and clean driving record; good clerical and communication skills; some facility with numbers; must be absolutely, positively reliable; flexible enough to work varied duties; trustworthy so as to work occasionally without direct supervision. Clerical tests and three letters of recommendation required.

Student Records Clerk

930179. *University Registrar's Office.* Requirements: Some college, bachelor's degree preferred; experience with computers and/or automated systems; ability to work well in public service position. Clerical tests and three letters of recommendation required.

Medical Campus

The following is a partial list of positions available at the School of Medicine. Employees who are interested in submitting a transfer request should contact the Human Resources Department of the medical school at 362-4920 to request an application. External candidates may call 362-7195 for information regarding application procedures or may submit a resume to the Human Resources office located at 4480 Clayton Ave., Campus Box 8002, St. Louis, Mo. 63110. Please note that the medical school does not disclose salary information for vacancies, and the office strongly discourages inquiries to departments other than Human Resources.

Statistical Data Analyst

930481-R. *Internal Medicine.* Requirements: Bachelor's degree, doctorate highly preferred. Prefer an individual with experience in data manipulation and analysis; desire individual with two years research experience in psychiatric and/or medical epidemiology.

Medical Transcriptionist

930534-R. *Neurology.* Requirements: High school graduate/equivalent with one to two years experience in a medical setting; typing 60 wpm; thorough knowledge of medical terminology; PC and word-processing experience.

Programmer Analyst II

930607-R. *Ob/Gyn.* Requirements: Bachelor's degree in programming or statistics with at least three years programming experience with Dbase in a DOS Network environment.

Medical Research Technician

930616-R. *Psychiatry.* Requirements: Bachelor's degree; must have theoretical knowledge of all aspects of molecular biology; prefer individual with practical experience of PCR and DNA sequencing.

Secretary I

930617-R. *Biology and Biomedical Science.* Requirements: High school graduate/equivalent; should have one year experience with word processing and be familiar with general office equipment; must be reliable, accurate and have the ability to deal with Washington University faculty, students, personnel and the public; typing 50 wpm.

Secretary II

930621-R. *Ophthalmology.* Schedule: Part-time, 20 hours a week — hours will vary depending on workload. Requirements: High school graduate/equivalent, two years college preferred. Desire individual with two to five years secretarial experience; should be highly organized and have good communication skills; must be personable and able to relate well with faculty, staff and trainees; typing 60 wpm.

Medical Research Technician

930636-R. *Allergy and Immunology.* Schedule: Full-time with occasional weekends or evenings. Requirements: Bachelor's degree, master's degree preferred; experience in protein isolation and characterization, gel electrophoresis and immunoblotting; some molecular biological experience desired.

Data Assistant

930641-R. *Allergy and Immunology.* Schedule: Part-time, 15 hours a week — 6:30-9:30 p.m., some weekends. Requirements: Minimum of two years college-related coursework with three to five years experience or bachelor's degree with one to three years experience; should have experience in telephone interviewing and interacting with participants in clinical studies on allergies.

Analyst for Program and Finance Planning

930665-R. *General Administration.* Requirements: Bachelor's degree in business with three to four years related experience or MBA or other advanced degree in a related field with related work experience; should have excellent communication and analytical skills, creativity and resourcefulness. Position requires experience with microcomputers.

Research Patient Coordinator/ Professional

930666-R. *Neurological Surgery.* Requirements: BSN, additional graduate work preferred; must be licensed in the state of Missouri; prefer experience in neurology/ neurosurgical nursing.

Class trains future architects to produce accessible buildings — *from page 1*

rather than simply adding a ramp to an entranceway with stairs, an architect would create a single design that accommodates people of all abilities.

Installing a ramp next to the set of stairs provides accessibility, but it makes a demarcation between the "disabled" entrance and the "regular" entrance. An entranceway that is designed to be naturally accessible to all sends a very different message.

"It's not a question of just knowing what the minimum standards are," says Lazarus, "but of understanding the requirement of people with disabilities and then thinking about how to make that integral to your design."

In addition to this empathic learning, Lazarus' students have met with members of disability communities in St. Louis. So far the group has met with, among others, members of Paraquad and the Missouri School for the Blind. A lawyer talked about the legal history of the ADA, and a member of the Gerontological Institute at St. Louis University discussed how the built environment can inhibit or promote interaction for the aging population.

Comments from students indicated that they found the whole experience amazing, said Lazarus. Many issues came up from their own empathic experience, such as, "How do you open a door from a wheelchair? How does someone with little upper body strength get from their wheelchair to the toilet?"

Later in the semester students will pick an element from an off-campus building, such as a door, a toilet or lighting, and create a design proposal incorporating both the ADA and principles of universal design.

The course arose out of Lazarus' interest in the ADA. While on maternity leave in January 1992, she read about the ADA and thought it would be an interesting topic to research. Her HOK supervisor agreed and sent her to Washington, D.C., to meet with congressional members behind the legislation and Department of Justice officials responsible for compliance.

While Lazarus was researching in Washington, D.C., Robert Silverstein, chief counsel of the Senate Subcommittee on Disability Policy, asked her, "What is your profession up to? What are you doing about training architects so they don't keep producing these inaccessible and insensitive buildings?"

Lazarus realized she didn't know what architecture schools were doing along those lines, so she began thinking about teaching a course at Washington University. "I had mentioned this project to some faculty, who mentioned it to Dinos (Constantine Michaelides, dean of the School of Architecture). The suggestion to teach the course came from him, though it was a very mutual agreement."

— Debby Aronson